

# Notice of Allowability

Application No.

10/072,470

Examiner

Christopher L. Lavin

Applicant(s)

FORAN ET AL.

Art Unit

2621

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to an interview which began on 02/14/06.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### EXAMINER'S AMENDMENT

1. An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on 02/14/06, Kenneth Watov requested an extension of time for 2 MONTH(S) and authorized the Director to charge Deposit Account No. 23-0510 the required fee of \$450 for this extension and authorized the following examiner's amendment. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Please replace claim 1 with the following:

A method comprising the steps of:

capturing an image of a tissue microarray at a first magnification, the tissue microarray including a plurality of disks, each disk including a sample of a biological specimen;

locating a first group of disks from the plurality of disks using one or more visual features of the first group of disks, the locating comprising:

generating a disk template that is substantially the same size as the disks in the captured image;

matching the template to the said one or more visual features of said first group of disks; and

determining the coordinates of candidate disk cores;

identifying a grid defined by the first group of disks by locating rows and columns connecting said candidate disk cores;

locating a second group of disks from the plurality of disks using grid intersections in the identified grid to locate disks which were not located using said template and at positions that do not include the one or more visual features of the first group of disks;

capturing an image of each one of the first group of disks and the second group of disks at a second magnification; and

storing the captured images.

Please replace claim 14 with the following:

A computer readable medium coded with machine-executable instructions for causing a data processing apparatus to perform a method comprising the steps of:

controlling an imaging device to capture an image of a tissue microarray at a first magnification, the tissue microarray including a plurality of disks, each disk including a sample of a biological specimen;

locating a first group of disks from the plurality of disks using one or more visual features of the first group of disks, the locating comprising:

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generating a disk template that is substantially the same size as the disks in the captured image;

matching the template to the said one or more visual features of said first group of disks; and

determining the coordinates of candidate disk cores;

identifying a grid defined by the first group of disks by locating rows and columns connecting said candidate disk cores;

locating a second group of disks from the plurality of disks using grid intersections in the identified grid to locate disks which were not located using said template and at positions that do not include the one or more visual features of the first group of disks;

controlling the imaging device to capture an image of each one of the first group of disks and the second group of disks at a second magnification; and

storing the captured images.

Please replace claim 21 with the following:

A system comprising:

capturing means for capturing an image of a tissue microarray at a first magnification, the tissue microarray including a plurality of disks, each disk including a sample of a biological specimen;

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first locating means for locating a first group of disks from the plurality of disks using one or more visual features of the first group of disks, the first locating means comprising:

means for generating a disk template that is substantially the same size as the disks in the captured image;

means for matching the template to the said one or more visual features of said first group of disks; and

means for determining the coordinates of candidate disk cores;

identifying means for identifying a grid defined by the first group of disks by locating rows and columns connecting said candidate disk cores;;

second locating means for locating a second group of disks from the plurality of disks using grid intersections in the identified grid to locate disks which were not located using said template and at positions that do not include the one or more visual features of the first group of disks;

the capturing means further for capturing an image of each one of the first group of disks and the second group of disks at a second magnification; and

storing means for storing the captured images.

Please replace claim 22 with the following:

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A system comprising an imaging device and a computer, the imaging device responsive to control signals to provide images at a specified magnification and a specified location within a tissue microarray, and the computer providing the control signals to the imaging device and receiving the images provided by the imaging device, the computer being configured to locate a first group of disks from the plurality of disks using one or more visual features of the first group of disks on the tissue microarray within an image of the tissue microarray captured at a first magnification, the locating configuration comprising:

generating a disk template that is substantially the same size as the disks in the captured image;

matching the template to the said one or more visual features of said first group of disks; and

determining the coordinates of candidate disk cores;

the computer being configured to identify a grid defined by the first group of disks by locating rows and columns connecting said candidate disk cores;

and the computer being further configured to locate a second group of disks on the tissue microarray using grid intersections in the identified grid to locate disks which were not located using said template and at positions that do not include the one or more visual features of the first group of disks.

***Allowable Subject Matter***

2. Claims 1 – 28 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The art of record does not teach nor does it suggest the specific features called for in the claims, particularly the newly amended approach to registering disks where first a disk template is used to locate all possible disks. The located disks are then used to compute a grid which can finally be used to locate the remaining non-identified disks.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

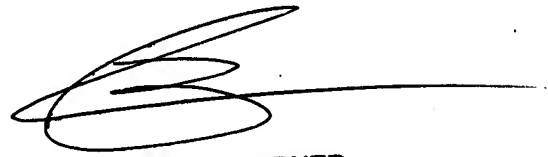
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher L. Lavin whose telephone number is 571-272-7392. The examiner can normally be reached on M - F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Lavin

A handwritten signature in black ink, appearing to read 'Chris Lavin', with a long horizontal flourish extending to the right.A handwritten signature in black ink, appearing to read 'Brian Werner', with a long horizontal flourish extending to the right.

**BRIAN WERNER**  
**PRIMARY EXAMINER**